



Department of Energy

Ohio Field Office Fernald Area Office

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4457

AUG 08 2002

Miami Valley Ready Mix
Mr. Bill Brown
7466 New Haven Road
Harrison, Ohio 45030

DOE-0629-02

Dear Mr. Brown:

GROUNDWATER MONITORING WELL RESULTS FOR 2001

As you are aware, the U.S. Department of Energy (DOE) has installed groundwater Monitoring Wells 2391, 2394, 3391, 2898, and 3898 on your property to collect water samples for analysis. DOE samples these wells to track the progress of the site's groundwater restoration.

This letter presents the results of the samples collected in 2001 for Monitoring Wells 2898 and 3898. Monitoring Wells 2391, 2394, and 3391 have not been sampled since 1993. Monitoring ceased at these wells once enough data had been collected to support the various sampling programs.

We appreciate your participation in this important program and the water quality results will continue to be reported to you. Also, the water quality monitoring results for Monitoring Wells 2898 and 3898 can be found in annual site environmental reports (issued in June of each year), which are available at the Fernald Environmental Management Project (FEMP) Public Environmental Information Center.

Methodology

FEMP personnel have sampled these monitoring wells per the U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency requirements. Data from samples collected from the monitoring wells are used to determine the quality of the groundwater in the area surrounding the FEMP.

Results and Discussion

Total uranium is considered the primary constituent of concern at the FEMP. Table 1 summarizes the monitoring results from the two wells for total uranium and compares them to the uranium groundwater Final Remediation Level (FRL). An Explanation of Significant Differences (ESD) pertaining to the site groundwater remedy was approved by EPA on November 30, 2001. The ESD amended the Operable Unit 5 Record of Decision by adopting the Safe Drinking Water Act Maximum Contaminant Level for uranium (30 micrograms per liter [$\mu\text{g/L}$]) as both the FRL for groundwater restoration and the uranium effluent discharge limit to the Great Miami River. Since the new FRL was in effect at the end of 2001, it was used as the basis of comparison for the entire year. The 2001 total uranium results from the two wells have remained below the FRL.

Attachment A is a Fact Sheet that provides explanations of the terms used in this transmittal. When

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reviewing the monitoring results for each sampling period, please keep in mind that FEMP personnel sample monitoring wells for specific projects. As the FEMP continues its groundwater remediation efforts, the requirements for each project change; therefore, constituents analyzed by the laboratory may also change. Consequently, the constituents analyzed may vary from one sampling event to the next depending on what data are needed in order to fulfill reporting requirements.

The wells on your property were sampled for a range of constituents. The FEMP has conducted independent analyses for these constituents to investigate the possible presence of these constituents at elevated concentrations in groundwater attributable to historical FEMP processing operations. The FEMP has committed to remediate the groundwater in the affected portion of the Great Miami Aquifer and is currently engaged in active groundwater restoration. The aquifer is being cleaned up to concentrations known as FRLs, which are defined in the Record of Decision for Remedial Actions at Operable Unit 5. Attachment A contains more information on FRLs.

Attachment B presents the monitoring results from these two wells and the associated FEMP groundwater FRLs. Also, if there was more than one sample result per day (e.g., a duplicate sample), then only the maximum sample concentration is reported and compared to its FRL so as to provide you with the most conservative result. However, if a filtered and an unfiltered sample was collected on the same day, then the results of both samples are reported and compared to its FRL.

TABLE 1

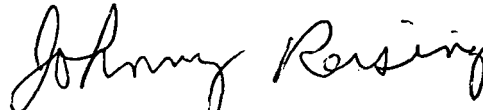
2001 MONITORING WELL SUMMARY RESULTS FOR TOTAL URANIUM

Monitoring Well	FRL	Ranges for this Well
2898	30 µg/L	6.102 to 13.584 µg/L
3898	30 µg/L	0.318 to 0.452 µg/L

Additional information concerning the FEMP restoration plan and documents referred to above are available at the FEMP Public Environmental Information Center located in the Delta Building at 10995 Hamilton-Cleves Highway, Harrison, OH; phone: (513) 648-7480.

DOE is committed to making the environmental restoration of the FEMP effective and successful. Your cooperation in this effort is greatly appreciated. If you have any questions regarding your monitoring results, then please contact Kathleen Nickel at (513) 648-3166.

Sincerely,



Johnny W. Reising
Associate Director
Environmental Management

FEMP: Nickel
Attachments: As stated

Mr. Brown

DOE-0629-02

cc w/enclosure:

R. Janke, OH/FEMP
K. Nickel, OH/FEMP
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ATTACHMENT A

FACT SHEET

This attachment provides explanations for the terms used in this information packet. Please refer to the cover letter for additional information.

Monitoring Results

The monitoring well results report the name of the constituent analyzed, the concentration measured, and the unit of concentration. Some FEMP projects require a determination of the dissolved (filtered) constituent concentration, as well as the total (unfiltered) concentration. Filtering a groundwater sample results in the removal of suspended soil particles that are greater than 0.45 micrometers in diameter. This diameter is approximately equivalent to 1/200 of the thickness of this page.

Units

The monitoring well results are reported in standard concentration or radioactivity units. These are:

- | | |
|-------|--|
| µg/L | (micrograms per liter) A unit of measure of the concentration of a substance. This unit is approximately equivalent to parts per billion (ppb). As an illustration, 1 µg/L (ppb) is roughly one drop of gasoline in a railroad box car full of water. |
| mg/L | (milligrams per liter) A unit of measure of the concentration of a substance. This unit is approximately equivalent to parts per million (ppm). As an illustration, 1 mg/L (ppm) is roughly one drop of gasoline in the gas tank of a full-size automobile. |
| pCi/L | (picocuries per liter) A unit of measure of the radioactivity of a substance. Radioactivity is the process in which the nucleus of an unstable atom spontaneously decays or disintegrates. Radiation is the energy that is released when the disintegration or decay occurs. |

Final Remediation Levels

The Operable Unit 5 Record of Decision established FRLs for FEMP-related contaminants in environmental media (i.e., soil, surface water, sediment, and groundwater). These FRLs are legally binding cleanup levels that will be used to track and certify the completion of the FEMP's remediation process. FRLs were specifically developed for the Great Miami Aquifer for those constituents that are presently in the Great Miami Aquifer and those that have the potential to reach the aquifer within 1,000 years at levels that pose an unacceptable risk to human health and/or the environment.

ATTACHMENT B

TABLE B-1
MONITORING WELL DATA

Monitoring Well	Constituent	Sample Date	Result ^a	FRL ^b
2898	1,1-Dichloroethane (unfiltered)	4/30/01	ND	280 µg/L
	1,1-Dichloroethene (unfiltered)	4/30/01	ND	7 µg/L
	1,2-Dichloroethane (unfiltered)	2/6/01	ND	5 µg/L
	1,2-Dichloroethane (unfiltered)	4/30/01	ND	5 µg/L
	1,2-Dichloroethane (unfiltered)	7/31/01	ND	5 µg/L
	1,2-Dichloroethane (unfiltered)	11/13/01	ND	5 µg/L
	4-Nitrophenol (unfiltered)	4/30/01	ND	320 µg/L
	alpha-Chlordane (unfiltered)	4/30/01	ND	2 µg/L
	Antimony (filtered)	4/30/01	ND	0.006 mg/L
	Aroclor-1254 (unfiltered)	4/30/01	ND	0.2 µg/L
	Arsenic (filtered)	2/6/01	ND	0.05 mg/L
	Arsenic (filtered)	4/30/01	ND	0.05 mg/L
	Arsenic (unfiltered)	7/31/01	ND	0.05 mg/L
	Arsenic (filtered)	11/13/01	ND	0.05 mg/L
	Barium (filtered)	4/30/01	0.0751 mg/L	2 mg/L
	Benzene (unfiltered)	2/6/01	ND	5 µg/L
	Benzene (unfiltered)	4/30/01	ND	5 µg/L
	Benzene (unfiltered)	7/31/01	ND	5 µg/L
	Benzene (unfiltered)	11/13/01	ND	5 µg/L
	Beryllium (filtered)	4/30/01	ND	0.004 mg/L
	bis(2-Chloroisopropyl)ether (unfiltered)	4/30/01	ND	5 µg/L
	bis(2-Ethylhexyl)phthalate (unfiltered)	4/30/01	ND	6 µg/L
	Boron (filtered)	4/30/01	0.0317 mg/L	0.33 mg/L
	Bromodichloromethane (unfiltered)	4/30/01	ND	100 µg/L
	Bromomethane (unfiltered)	4/30/01	ND	2.1 µg/L
	Cadmium (filtered)	4/30/01	ND	0.014 mg/L
	Carbazole (unfiltered)	4/30/01	ND	11 µg/L
	Carbon disulfide (unfiltered)	4/30/01	ND	5.5 µg/L
	Chloroethane (unfiltered)	4/30/01	ND	1 µg/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^a	FRL ^b
2898 (Cont'd.)	Chloroform (unfiltered)	4/30/01	ND	100 µg/L
	Cobalt (filtered)	4/30/01	ND	0.17 mg/L
	Copper (filtered)	4/30/01	ND	1.3 mg/L
	Ethylbenzene (unfiltered)	2/6/01	ND	NA
	Ethylbenzene (unfiltered)	4/30/01	ND	NA
	Ethylbenzene (unfiltered)	7/31/01	ND	NA
	Ethylbenzene (unfiltered)	11/13/01	ND	NA
	Fluoride (unfiltered) ^c	4/30/01	ND	4 mg/L
	Isopropyl benzene (unfiltered)	2/6/01	ND	NA
	Isopropyl benzene (unfiltered)	4/30/01	ND	NA
	Isopropyl benzene (unfiltered)	7/31/01	ND	NA
	Isopropyl benzene (unfiltered)	11/13/01	ND	NA
	Lead (filtered) ^c	4/30/01	ND	0.015 mg/L
	Manganese (filtered)	4/30/01	0.684 mg/L	0.9 mg/L
	Mercury (filtered)	2/6/01	ND	0.002 mg/L
	Mercury (filtered)	4/30/01	ND	0.002 mg/L
	Mercury (unfiltered)	7/31/01	ND	0.002 mg/L
	Mercury (filtered)	11/13/01	ND	0.002 mg/L
	Methylene chloride (unfiltered)	4/30/01	ND	5 µg/L
	Molybdenum (filtered)	4/30/01	ND	0.10 mg/L
	Neptunium-237 (filtered)	2/6/01	ND	1 pCi/L
	Neptunium-237 (filtered)	4/30/01	ND	1 pCi/L
	Neptunium-237 (unfiltered)	7/31/01	ND	1 pCi/L
	Neptunium-237 (filtered)	11/13/01	ND	1 pCi/L
	Nickel (filtered)	4/30/01	0.0042 mg/L	0.1 mg/L
	Nitrate/Nitrite (unfiltered) ^d	2/6/01	0.022 mg/L	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	4/30/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	7/31/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	11/13/01	0.05 mg/L	11 mg/L
	p-Methylphenol (unfiltered)	4/30/01	ND	29 µg/L
	Phosphorus (unfiltered)	2/6/01	0.41 mg/L	NA

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^a	FRL ^b
2898 (Cont'd.)	Phosphorus (unfiltered)	4/30/01	ND	NA
	Phosphorus (unfiltered)	7/31/01	ND	NA
	Phosphorus (unfiltered)	11/13/01	ND	NA
	Potassium (filtered)	2/6/01	5.41 mg/L	NA
	Potassium (filtered)	4/30/01	5.31 mg/L	NA
	Potassium (unfiltered)	7/31/01	5.46 mg/L	NA
	Potassium (filtered)	11/13/01	6.85 mg/L	NA
	Radium-226 (filtered)	4/30/01	0.612 pCi/L	20 pCi/L
	Radium-228 (filtered)	4/30/01	ND	20 pCi/L
	Selenium (filtered)	4/30/01	ND	0.05 mg/L
	Silver (filtered)	4/30/01	ND	0.05 mg/L
	Sodium (filtered)	2/6/01	19.8 mg/L	NA
	Sodium (filtered)	4/30/01	19.3 mg/L	NA
	Sodium (unfiltered)	7/31/01	18.9 mg/L	NA
	Sodium (filtered)	11/13/01	19.1 mg/L	NA
	Strontium-90 (filtered)	2/6/01	ND	8 pCi/L
	Strontium-90 (filtered)	4/30/01	ND	8 pCi/L
	Strontium-90 (unfiltered)	7/31/01	ND	8 pCi/L
	Strontium-90 (filtered)	11/13/01	ND	8 pCi/L
	Technetium-99 (filtered)	4/30/01	ND	94 pCi/L
	Thorium-228 (filtered)	4/30/01	ND	4 pCi/L
	Thorium-230 (filtered)	4/30/01	0.01 pCi/L	15 pCi/L
	Thorium-232 (filtered)	4/30/01	0.013 pCi/L	1.2 pCi/L
	Toluene (unfiltered)	2/6/01	0.2 µg/L	NA
	Toluene (unfiltered)	4/30/01	ND	NA
	Toluene (unfiltered)	7/31/01	ND	NA
	Toluene (unfiltered)	11/13/01	0.1 µg/L	NA
	Trichloroethene (unfiltered)	4/30/01	ND	5 µg/L
	Total Uranium (filtered)	2/6/01	6.102 µg/L	30 µg/L
	Total Uranium (unfiltered)	2/6/01	7.012 µg/L	30 µg/L
	Total Uranium (filtered)	4/30/01	12.067 µg/L	30 µg/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^a	FRL ^b
2898 (Cont'd.)	Total Uranium (unfiltered)	4/30/01	13.584 µg/L	30 µg/L
	Total Uranium (unfiltered)	7/31/01	6.866 µg/L	30 µg/L
	Total Uranium (filtered)	11/13/01	9.24 µg/L	30 µg/L
	Total Uranium (unfiltered)	11/13/01	6.87 µg/L	30 µg/L
	Vanadium (filtered)	4/30/01	ND	0.038 mg/L
	Vinyl chloride (unfiltered)	4/30/01	ND	2 µg/L
	Xylenes, Total (unfiltered)	2/6/01	ND	NA
	Xylenes, Total (unfiltered)	4/30/01	ND	NA
	Xylenes, Total (unfiltered)	7/31/01	ND	NA
	Xylenes, Total (unfiltered)	11/13/01	ND	NA
	Zinc (filtered)	4/30/01	ND	0.021 mg/L
3898	1,1-Dichloroethane (unfiltered)	4/30/01	ND	280 µg/L
	1,1-Dichloroethene (unfiltered)	4/30/01	ND	7 µg/L
	1,2-Dichloroethane (unfiltered)	2/5/01	ND	5 µg/L
	1,2-Dichloroethane (unfiltered)	4/30/01	ND	5 µg/L
	1,2-Dichloroethane (unfiltered)	7/31/01	ND	5 µg/L
	1,2-Dichloroethane (unfiltered)	11/13/01	ND	5 µg/L
	4-Nitrophenol (unfiltered)	4/30/01	ND	320 µg/L
	alpha-Chlordane (unfiltered)	4/30/01	ND	2 µg/L
	Antimony (filtered)	4/30/01	ND	0.006 mg/L
	Aroclor-1254 (unfiltered)	4/30/01	ND	0.2 µg/L
	Arsenic (filtered)	2/5/01	ND	0.05 mg/L
	Arsenic (filtered)	4/30/01	ND	0.05 mg/L
	Arsenic (filtered)	7/31/01	0.0041 mg/L	0.05 mg/L
	Arsenic (filtered)	11/13/01	0.0019 mg/L	0.05 mg/L
	Barium (filtered)	4/30/01	0.0741 mg/L	2 mg/L
	Benzene (unfiltered)	2/5/01	ND	5 µg/L
	Benzene (unfiltered)	4/30/01	ND	5 µg/L
	Benzene (unfiltered)	7/31/01	ND	5 µg/L
	Benzene (unfiltered)	11/13/01	ND	5 µg/L
	Beryllium (filtered)	4/30/01	ND	0.004 mg/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^a	FRL ^b
3898 (Cont'd.)	bis(2-Chloroisopropyl)ether (unfiltered)	4/30/01	ND	5 µg/L
	bis(2-Ethylhexyl)phthalate (unfiltered)	4/30/01	ND	6 µg/L
	Boron (filtered)	4/30/01	0.0405 mg/L	0.33 mg/L
	Bromodichloromethane (unfiltered)	4/30/01	ND	100 µg/L
	Bromomethane (unfiltered)	4/30/01	ND	2.1 µg/L
	Cadmium (filtered)	4/30/01	ND	0.014 mg/L
	Carbazole (unfiltered)	4/30/01	ND	11 µg/L
	Carbon disulfide (unfiltered)	4/30/01	ND	5.5 µg/L
	Chloroethane (unfiltered)	4/30/01	ND	1 µg/L
	Chloroform (unfiltered)	4/30/01	ND	100 µg/L
	Cobalt (filtered)	4/30/01	ND	0.17 mg/L
	Copper (filtered)	4/30/01	ND	1.3 mg/L
	Ethylbenzene (unfiltered)	2/5/01	ND	NA
	Ethylbenzene (unfiltered)	4/30/01	ND	NA
	Ethylbenzene (unfiltered)	7/31/01	ND	NA
	Ethylbenzene (unfiltered)	11/13/01	ND	NA
	Fluoride (unfiltered) ^c	4/30/01	ND	4 mg/L
	Isopropyl benzene (unfiltered)	2/5/01	ND	NA
	Isopropyl benzene (unfiltered)	4/30/01	ND	NA
	Isopropyl benzene (unfiltered)	7/31/01	ND	NA
	Isopropyl benzene (unfiltered)	11/13/01	ND	NA
	Lead (filtered) ^c	4/30/01	ND	0.015 mg/L
	Manganese (filtered)	4/30/01	0.352 mg/L	0.9 mg/L
	Mercury (filtered)	2/5/01	ND	0.002 mg/L
	Mercury (filtered)	4/30/01	ND	0.002 mg/L
	Mercury (filtered)	7/31/01	ND	0.002 mg/L
	Mercury (filtered)	11/13/01	ND	0.002 mg/L
	Methylene chloride (unfiltered)	4/30/01	ND	5 µg/L
	Molybdenum (filtered)	4/30/01	ND	0.10 mg/L
	Neptunium-237 (filtered)	2/5/01	ND	1 pCi/L
	Neptunium-237 (filtered)	4/30/01	ND	1 pCi/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^a	FRL ^b
3898 (Cont'd.)	Neptunium-237 (filtered)	7/31/01	ND	1 pCi/L
	Neptunium-237 (filtered)	11/13/01	5.01E-09 pCi/L	1 pCi/L
	Nickel (filtered)	4/30/01	ND	0.1 mg/L
	Nitrate/Nitrite (unfiltered) ^d	2/5/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	4/30/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	7/31/01	ND	11 mg/L
	Nitrate/Nitrite (unfiltered) ^d	11/13/01	0.031 mg/L	11 mg/L
	p-Methylphenol (unfiltered)	4/30/01	ND	29 µg/L
	Phosphorus (unfiltered)	2/5/01	0.0709 mg/L	NA
	Phosphorus (unfiltered)	4/30/01	ND	NA
	Phosphorus (unfiltered)	7/31/01	0.0985 mg/L	NA
	Phosphorus (unfiltered)	11/13/01	0.113 mg/L	NA
	Potassium (filtered)	2/5/01	2.46 mg/L	NA
	Potassium (filtered)	4/30/01	2.16 mg/L	NA
	Potassium (filtered)	7/31/01	2.69 mg/L	NA
	Potassium (filtered)	11/13/01	2.77 mg/L	NA
	Radium-226 (filtered)	4/30/01	ND	20 pCi/L
	Radium-228 (filtered)	4/30/01	ND	20 pCi/L
	Selenium (filtered)	4/30/01	ND	0.05 mg/L
	Silver (filtered)	4/30/01	ND	0.05 mg/L
	Sodium (filtered)	2/5/01	11.1 mg/L	NA
	Sodium (filtered)	4/30/01	10.6 mg/L	NA
	Sodium (filtered)	7/31/01	11.7 mg/L	NA
	Sodium (filtered)	11/13/01	11 mg/L	NA
	Strontium-90 (filtered)	2/5/01	ND	8 pCi/L
	Strontium-90 (filtered)	4/30/01	ND	8 pCi/L
	Strontium-90 (filtered)	7/31/01	ND	8 pCi/L
	Strontium-90 (filtered)	11/13/01	ND	8 pCi/L
	Technetium-99 (filtered)	4/30/01	ND	94 pCi/L
	Thorium-228 (filtered)	4/30/01	ND	4 pCi/L
	Thorium-230 (filtered)	4/30/01	ND	15 pCi/L

TABLE B-1
(Continued)

Monitoring Well	Constituent	Sample Date	Result ^a	FRL ^b
3898 (Cont'd.)	Thorium-232 (filtered)	4/30/01	ND	1.2 pCi/L
	Toluene (unfiltered)	2/5/01	ND	NA
	Toluene (unfiltered)	4/30/01	ND	NA
	Toluene (unfiltered)	7/31/01	ND	NA
	Toluene (unfiltered)	11/13/01	ND	NA
	Trichloroethene (unfiltered)	4/30/01	ND	5 µg/L
	Total Uranium (filtered)	2/5/01	0.318 µg/L	30 µg/L
	Total Uranium (unfiltered)	2/5/01	0.379 µg/L	30 µg/L
	Total Uranium (filtered)	4/30/01	0.41 µg/L	30 µg/L
	Total Uranium (unfiltered)	4/30/01	0.387 µg/L	30 µg/L
	Total Uranium (filtered)	7/31/01	0.452 µg/L	30 µg/L
	Total Uranium (unfiltered)	7/31/01	0.367 µg/L	30 µg/L
	Total Uranium (filtered)	11/13/01	0.404 µg/L	30 µg/L
	Total Uranium (unfiltered)	11/13/01	0.358 µg/L	30 µg/L
	Vanadium (filtered)	4/30/01	ND	0.038 mg/L
	Vinyl chloride (unfiltered)	4/30/01	ND	2 µg/L
	Xylenes, Total (unfiltered)	2/5/01	ND	NA
	Xylenes, Total (unfiltered)	4/30/01	ND	NA
	Xylenes, Total (unfiltered)	7/31/01	ND	NA
	Xylenes, Total (unfiltered)	11/13/01	ND	NA
	Zinc (filtered)	4/30/01	ND	0.021 mg/L

^aND = non-detectable concentrations; the lowest concentration that can be reliably detected is known as the detection limit. Non-detectable concentrations are between zero and the detection limit.

^bNA = not applicable

^cThe FRLs for fluoride and lead were changed and documented in the Operable Unit 5 Record of Decision by change pages.

^dThe FRL of 11 mg/L is for nitrate, but because of holding time considerations, nitrate/nitrite is analyzed. This is acceptable because nitrate/nitrite provides a more conservative result.